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11/28/01 #14

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Has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

Therefore, this

United States Patent

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Bence Lehman

Commissioner of Patents and Trademarks

Melvinia Gary
Attest



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United States Patent [19]

Spear et al.

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[45] Date of Patent: Jul. 1, 1997

[54] SWEPT TURBOMACHINERY BLADE

[75] Inventors: David A. Spear, Manchester; Bruce P. Biederman, Meriden, both of Conn.; John A. Orosa, Palm Beach Gardens, Fla.

[73] Assignee: United Technologies Corporation, Hartford, Conn.

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[51] Int. Cl.⁶ F01D 5/14

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[58] Field of Search 415/181, 220;
416/238, 242, 243

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Primary Examiner—Edward K. Look

Assistant Examiner—Mark Sgantzios

Attorney, Agent, or Firm—Kenneth C. Baran

[57] ABSTRACT

A swept turbomachinery blade for use in a cascade of such blades is disclosed. The blade (12) has an airfoil (22) uniquely swept so that an endwall shock (64) of limited radial extent and a passage shock (66) are coincident and a working medium (48) flowing through interblade passages (50) is subjected to a single coincident shock rather than the individual shocks. In one embodiment of the invention the forwardmost extremity of the airfoil defines an inner transition point (40) located at an inner transition radius $r_{t\text{-inner}}$. The sweep angle of the airfoil is nondecreasing with increasing radius from the inner transition radius to an outer transition radius $r_{t\text{-outer}}$, radially inward of the airfoil tip (26), and is nonincreasing with increasing radius between the outer transition radius and the airfoil tip.

3 Claims, 7 Drawing Sheets

